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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/463,059	01/19/2000	TATSUYA NAKANO	2224-163P	5816

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EXAMINER

CLARKE, YVETTE M

ART UNIT	PAPER NUMBER
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1752

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DATE MAILED: 09/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/463,059

Applicant(s)

NAKANO, TATSUYA

Examiner

Yvette M. Clarke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-2, 5-10, 12-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-10 and 12-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This is written in reference to application number 09/463059 filed on January 19, 2000.

Response to Amendment

1. Claims 3-4 and 11 have been cancelled. Claims 1-2, 5-10 and 12-14 are currently pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

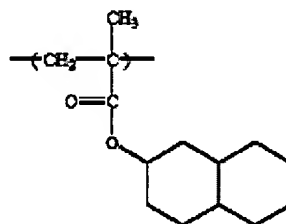
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 5-10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoi (US 6245485 B1). Aoi teaches a positive resist composition comprising (A) a compound generating an acid upon irradiation of an active light ray or radiation, (B) a resin having a polycyclic type alicyclic group and a carboxyl group and (C) a compound having at least two groups having a specific structure (see abstract). Component A is a photoacid generator capable of generating an acid upon irradiation with light such as UV, far-UV, g-line, I-line, h-line, KrF excimer, ArF excimer, e-beam or x-ray. Suitable examples include oxazole derivatives (PAG1), s-triazine derivatives (PAG2), iodonium salts (PAG3), sulfonium salts (PAG4), disulfone derivatives (PAG5) and iminosulfonate derivatives (PAG6) (c.65, l. 21-c. 81, l. 10). The photoacid generator is added in the amount of 0.001-40 weight %, preferably 0.01-20 weight % (c. 81, l. 11-16). The taught composition

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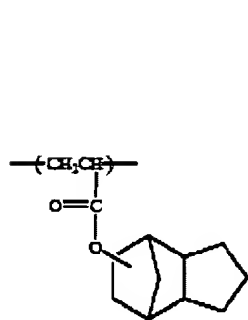
is coated on a substrate for use in the production of an integrated circuit, exposed through a predetermined mask, baked and developed to obtain a good resist pattern (c. 84, l. 53-58).

The polycyclic type alicyclic group contained in the resin (B) is preferably an alicyclic group having 5 or more carbon atoms, which may have a substituent. The resin component (B) preferably has a repeating structural unit having a polycyclic type alicyclic group on the side chain thereof, represented by formula (XXII), (XXIII) or (XXIV). The carboxyl group maybe contained in the said polycyclic unit or in a repeating unit different therefrom (c. 9, l. 20-30). Structures representative of the polycyclic type alicyclic moiety are shown as structures (1) – (46) (c. 10, l. 60-c.15, l. 29). Specific examples of repeating units

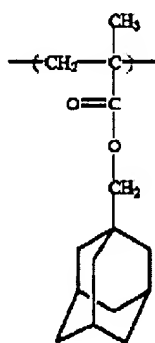


represented by formula (XXII)-(XIV) include:

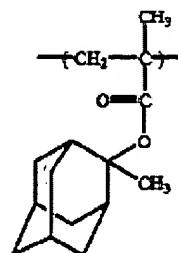
(a3),



(a10),



(a19) and



(a20) (c. 16-

19). It is the examiner's position that the given formula (a19) and (a20) meet the limitations of claimed formula (1) and (2) respectively. Given formula (a3) and (a10) meet the

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limitations of instant claim 9. Aoi however fails to exemplify the said compounds having an oxygen-containing substituent off of the polycyclic ring.

Aoi does however teach that preferred substituents of the polycyclic type alicyclic group include a hydroxyl group, a halogen atom, a nitro group, a cyano group, an amido group, and a sulfonamido group, alkoxy groups having 1-8 carbon atoms and alkyl groups having 1-8 carbon atoms (c. 10, l. 47-59). It is the examiner's position that one of ordinary skill in the art would have been motivated by the teaching of Aoi to make the taught polycyclic type resin (B) any of the disclosed structures such as (a3), (a10), (a19) or (a20) which are substituted with the preferred substituents including a hydroxyl group, or an alkoxy group having 1-8 carbon atoms in order to form a composition suitable for exposure using a light source of 220 nm or less and has a high sensitivity, good resolution and a high resistance against dry etching (c. 3, l. 40-51).

Response to Arguments

4. Applicant's arguments filed July 18, 2002 have been fully considered but they are not persuasive. Applicants argue that the Aoi fails to teach and/or suggest a combination of an adamantane backbone and an oxygen-containing group. Furthermore, applicants argue that the prior art also fails to teach the combination of a decalin or tricyclo[5.2.1.0^{2,6}]decane ring and an oxygen containing group as set forth in the instant claims. The examiner respectfully disagrees. The examiner agrees that such a compound is not exemplified by the cited prior art. However, Aoi clearly teaches a base resin comprising a polycyclic type alicyclic group on the side chain thereof, represented by formula (a3), (a10), (a19) or (a20). Aoi further teaches that the said polycyclic group maybe substituted wherein the preferred substituents

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include substituted with the preferred substituents including a hydroxyl group and an alkoxy group having 1-8 carbon atoms. One of ordinary skill in the art would have been motivated by the teachings of Aoai to make the taught polycyclic type resin (B) any of the disclosed structures such as (a3), (a10), (a19) or (a20) which are substituted with the preferred substituents including a hydroxyl group, or an alkoxy group having 1-8 carbon atoms in order to form a composition suitable for exposure using a light source of 220 nm or less and has a high sensitivity, good resolution and a high resistance against dry etching (c. 3, l. 40-51).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Nakano et al. (US 6391520 B1 and WO 99/61956) pertaining to compounds for photoresist and resin composition thereof.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

7. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action.

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In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette M. Clarke whose telephone number is 703-305-0589.

The examiner can normally be reached on Monday-Thursday 8-6:30.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet C. Baxter can be reached on 703-308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.


ymc
September 11, 2002


JANET BAXTER
PATENT EXAMINER
CENTER 1700